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Image Recorder Server with IP Camera and Pocket PC

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Abstract

We propose a new system for image recorder server from IP camera. The system consists of 2 parts, Server and viewer. Server is software running on PC with ability to capture image from IP camera and save to disk like an image server. The second part is the viewer. A user be able to monitor and view the saved image on the server via a web-based application from everywhere with password protection. Live and history image can be show to user to check the status of area or investigate the history event. Further more. The server can connect to IP camera to collect image or connect a web cam directly to the server for cost reduction. Finally, the user can view the image by using browser on the PC or Windows mobile phone.

Keywords: Image recorder, IP Camera, Pocket PC, Windows mobile, web-based application

1. Introduction

At present, the asset prevention or keeping for lost of asset getting into trouble that difficult. Today we have a technology that helps to solve these problem, security system and CCTV camera [1]. The latest technology is IP camera, IP Camera is a camera that has the ability to send images via internet [2]. It has ability to record video in real- time and sending over TCP/IP protocol, allow users see events from long distance, easiness control or set of function over the IP network and through the Internet via a web browser only users know IP address of camera. The only disadvantage of IP camera is it can't communicate into hard disk of computer over local network, can't open/close file and storing recorded video. We have solve these problem by using a software running in a computer , making it capture the picture from IP camera and storing recorded video into hard disk, allocate a group of file on each day, so easy to retrieve in the event that actual use.

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2. System Overview

Fig 1 shows the diagram of the system. The IP camera connects to the Internet via a local area network (LAN) which is the same network with Server. The server application periodically sends request packet to IP camera, Then IP camera sending back the capture image. The server saved sent image to it storage and categorize it depend on time and date captured. In the part of viewer, PC and Mobile, PC application use to connect to the server via the Internet and requesting an image according to requiring specific date and time. Then the server send captured image back. The server can be parallel service to multiple client, limit by the band width of the network and the performance of server itself. Furthermore, There are two types of client, PC and Mobile. The mobile application develop on Window mobile based (WM6.5), which mean user can be anywhere within the range of mobile service.

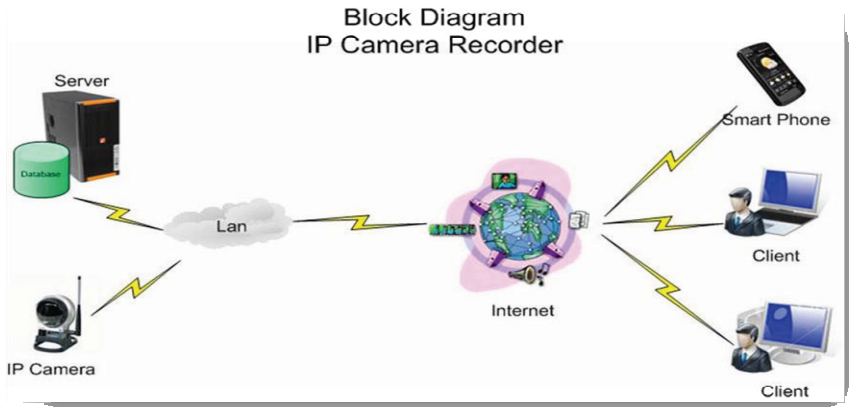

Fig. 1. IP Camera recorder's block diagram

3. Server Application

The server application design to be the main part of system, its function is to sending requesting packet to desire IP camera and retrieve the image packet back. Then save it to local storage(Harddisk) in category of date and time(Hour) for further use.

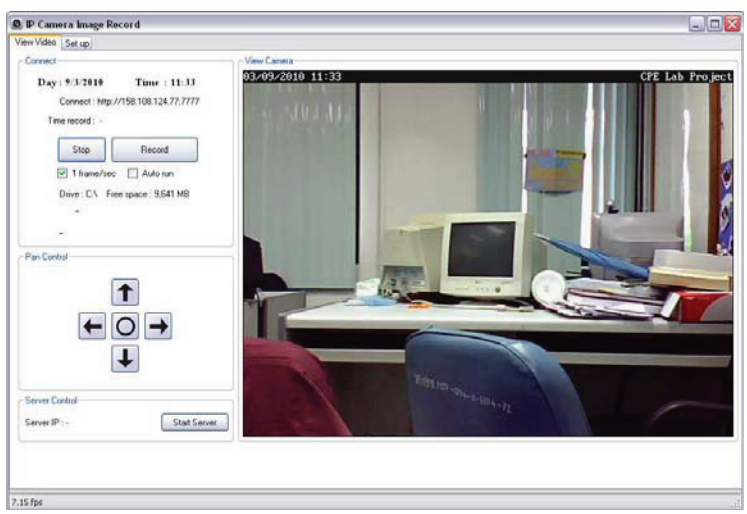

Fig. 2. Main server

In Fig 2. Show the image received from IP camera and other useful information such as currently time and date. It's also display the status of connection. User have to select the refresh rate of saving image, 1 frame/sec button. If the user uncheck this box, The system will record image as much as it can retrieve from IP camera into avi video

format. Check this box will reduce the image per second and also reduce the space of the stroage. Furthermore, The server application can control the motion of IP camera, Pan and tilt control to focus the desire area of recording. Anyway, before connecting to the IP camera. User have to setting up the IP of the IP camera. Fig 3. Show the setup tab for server. In camera detail area, User have to specific the IP of desire IP Camera with user and password to access if needed. In Time panning, User can program the schdule time to pan the camera. In user list, User can add and change the detail of user who can access to this server from clients.

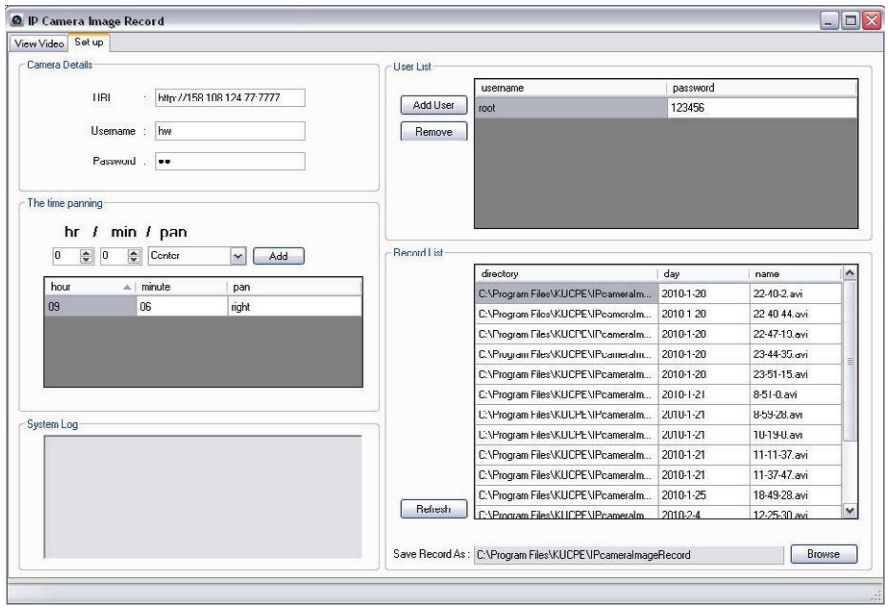

Fig. 3. Server setup

4. PC Client Application

The PC Client application is the main client to monitor or view the recorded image from the server. Start by setting up the connection by fill in the IP of the server with properly user and password. User is also control the motion of IP camera via pan control panel. Once the user start to receiving the image from the server lively, the live image will be show on the right panel. In the record list panel, User is also selecting the saved image or video from server to display. Furthermore, User is also setup the schedule to control the IP camera.

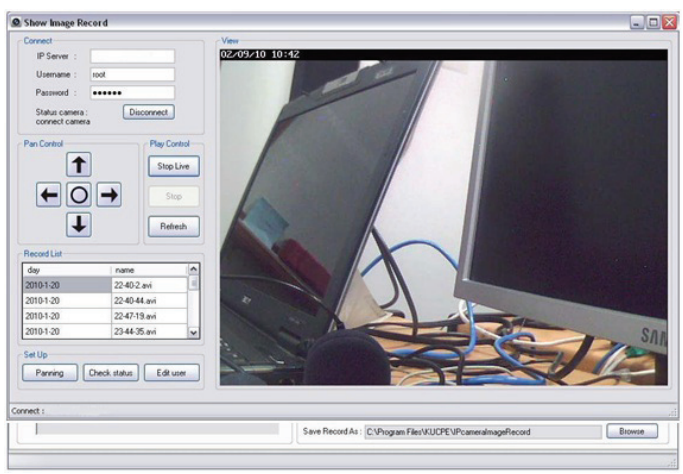

Fig. 4. Main Program Client

5. Pocket PC application

In case of the user need to monitor live image from IP camera or viewing the saved image from the server but they do not have PC client. They can using the smart phone to do that task. But the only mobile phone which have Window mobile 6.5(Pocket PC) [3] or better can do this. Fig 5 shows the image retrieve from the server with the connection via mobile network. Surely, User has to setting up the connection before using the pocket PC to connect the server. According to the limitation of mobile network bandwidth, The rate of refreshing image on the mobile phone quite slow and small, But good enough to monitor.

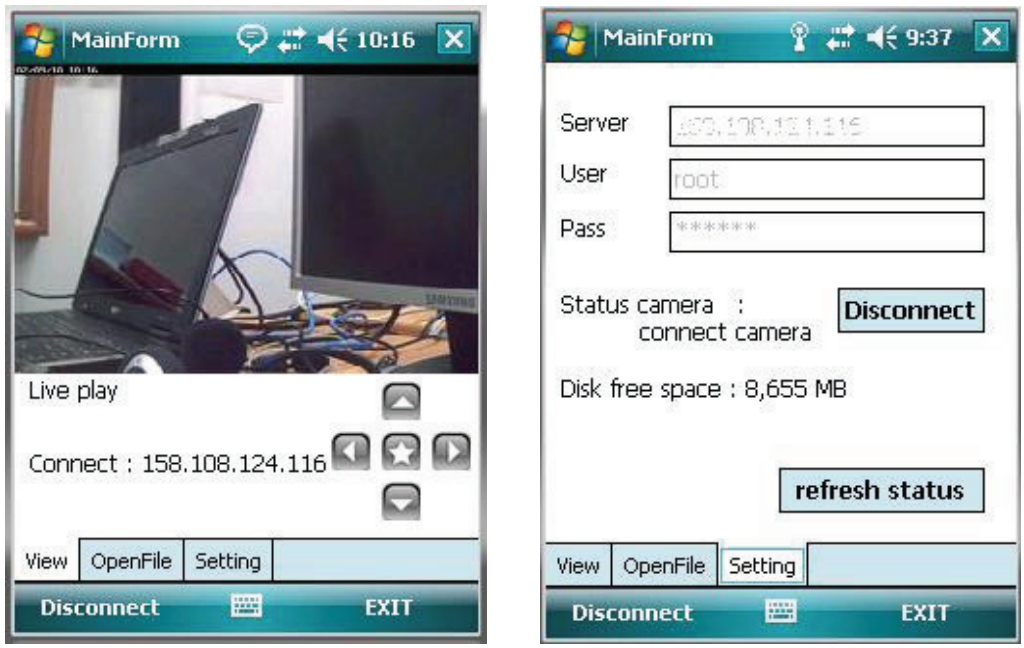

Fig. 5. Pocket PC client and setup window

6. Conclution

We have show the new system for image recorder server from IP camera. Which have 2 parts, server and viewer. The server is the PC application to sending periodicaly request packet to the server and recieve image to save to local storage. The client is the application to viewing the lively and recordingly image from the server. There are two types of client, PC and Mobile. PC client using high bandwidth wire internet connectiont to retrieve image, But mobile using limited bandwidth of moblie network to get an image. Anyway the moblie client give an advantage compare to the PC, Mobilability and free to viewing an image from anywhere in mobile service range. Finally the storage use to save 1 frame/sec for 1 hour is approximately 90 to 100 MB.

The contrain of this system is, The IP camera must be Linksys model wvc200. If user use the other model of Linksys the system can not control the pan and tilt ability.

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